



MICRORESISTIVITY LOG

Pioneer Energy Services

Company **GREAT PLAINS ENERGY, INC.**

Well **LANG NO.1**

Field **WILDCAT**

County **NORTON** State **KANSAS**

Location: **API #: 15-137-20749-00-00**

1650' FSL & 1400' FWL

SEC 32 TWP 2S RGE 23W

Other Services
**CNL/CDL
DIL**

Permanent Datum **GROUND LEVEL Elevation 2339'**
Log Measured From **KELLY BUSHING**
Drilling Measured From **KELLY BUSHING**

Elevation
K.B. **2346'**
D.F. **N/A**
G.L. **2339'**

Company **GREAT PLAINS ENERGY, INC.**
Well **LANG NO.1**
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State **KANSAS**

Date	7/26/2018
Run Number	ONE
Depth Driller	3645'
Depth Logger	3639'
Bottom Logged Interval	3638'
Top Log Interval	3000'
Casing Driller	8.625" @ 221'
Casing Logger	219'
Bit Size	7.875"
Type Fluid in Hole	CHEMICAL
Salinity, ppm CL	1400
Density / Viscosity	9.1 57
pH / Fluid Loss	10.5 6.4
Source of Sample	FLOWLINE
Rm @ Meas. Temp	.85 @ 74
Rmt @ Meas. Temp	.64 @ 74
Rmc @ Meas. Temp	1.15 @ 74
Source of Rmf / Rmc	CHARTS
Rm @ BHT	.56 @ 112
Operating Rig Time	3 HOURS
Max Rec. Temp. F	112 DEGF
Equipment Number	108
Location	HAYS
Recorded By	J. HENRICKSON
Witnessed By	CLAYTON ERICKSON

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All interpretations are opinions based on inferences from electrical or other measurements and Pioneer Wireline Services, LLC cannot and does not guarantee the accuracy or correctness of any interpretation, and Pioneer Wireline Services, LLC will not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees.

Comments

N/A DENOTES NOT AVAILABLE OR NON-APPLICABLE.

**NORTON KANSAS
3 WEST TO W3 ROAD, 1/4 NORTH, EAST INTO**

Log Measured From: KELLY BUSHING 7 Ft. Above Permanent Datum

**THANK YOU FOR USING PIONEER ENERGY SERVICES
www.pioneerenergy.com 785-625-3858**

Your Pioneer Energy Services Crew

Engineer: **J. HENRICKSON**
Operator:
Operator:
Operator:

This Log Record Was Witnessed By

Primary Witness: **CLAYTON ERICKSON**
Secondary Witness:
Secondary Witness:
Secondary Witness:

Log Variables






DatabaseC:\ProgramData\Warrior\Data\great_plains_lang_1.db
Dataset field/well/stackml/pass3.1/_vars_

Top - 3556.00 ft

A	BOREID in	BOTTEMP degF	CASEOD in	CASETHCK in	FLUIDDEN g/cc	M	MATRXDEN g/cc
1	7.875	112	5.5	0	1	2	2.71
NPORSEL	PERFS	SNDERR mmho/m	SNDERRM mmho/m	SPSHIFT mV	SRFTEMP degF	SZCOR	TDEPTH ft
Limestone	0	0	0	-190	78	Off	3639

3556.00 ft - Bottom

A	BOREID in	BOTTEMP degF	CASEOD in	CASETHCK in	FLUIDDEN g/cc	M	MATRXDEN g/cc
1	7.875	112	5.5	0	1	2	2.71
NPORSEL	PERFS	SNDERR mmho/m	SNDERRM mmho/m	SPSHIFT mV	SRFTEMP degF	SZCOR	TDEPTH ft
Limestone	0	0	0	-190	78	Off	3639

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
GR	40.58		GR-M&W (89-M&W)	3.00	3.50	50.00
CNLSC CNSSC	37.48 36.73		CNT-M&W (tk10-MW)	5.50	3.50	100.00
LSD DCAL SSD	28.43 28.42 27.93		CDL-M&W (168-130)	8.50	4.00	250.00
MCAL MI MN	19.83 19.83 19.83		ML-PSI STKBL ML (PSI-01) Stackable Microlog Tools	7.58	4.00	65.00
RLL3 RLL3F	15.80 15.79					

CILD 8.00

CILM 4.70

SP 0.20

DIL-M&W (1987)

18.50

3.50

220.00

Dataset: great_plains_lang_1.db: field/well/stackml/pass3.1
 Total length: 43.08 ft
 Total weight: 685.00 lb
 O.D.: 4.00 in

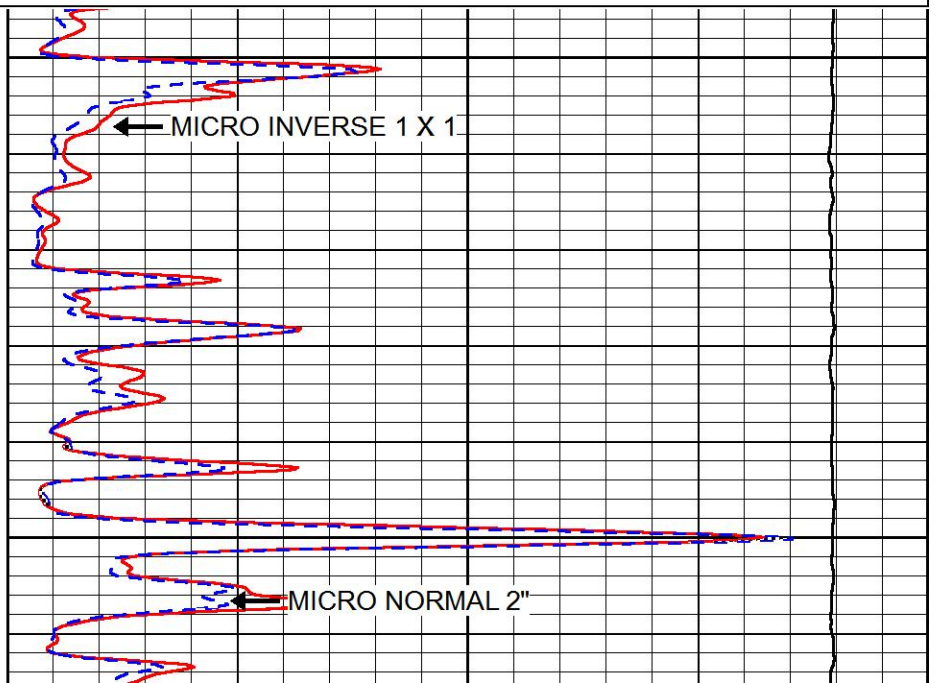
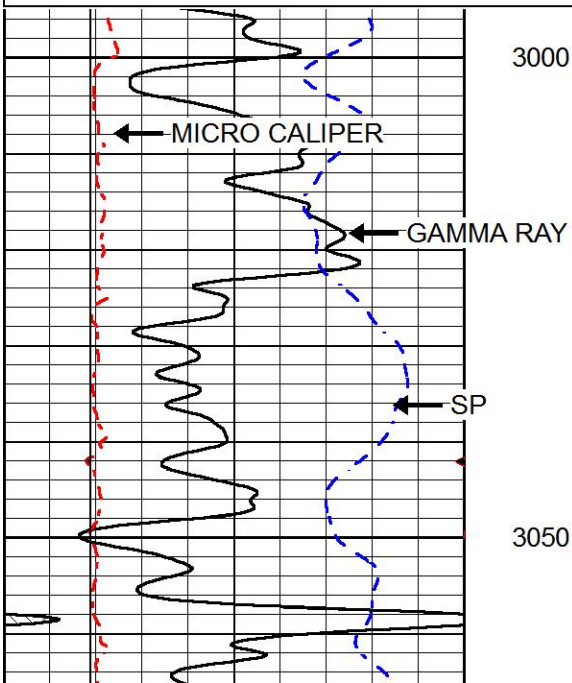


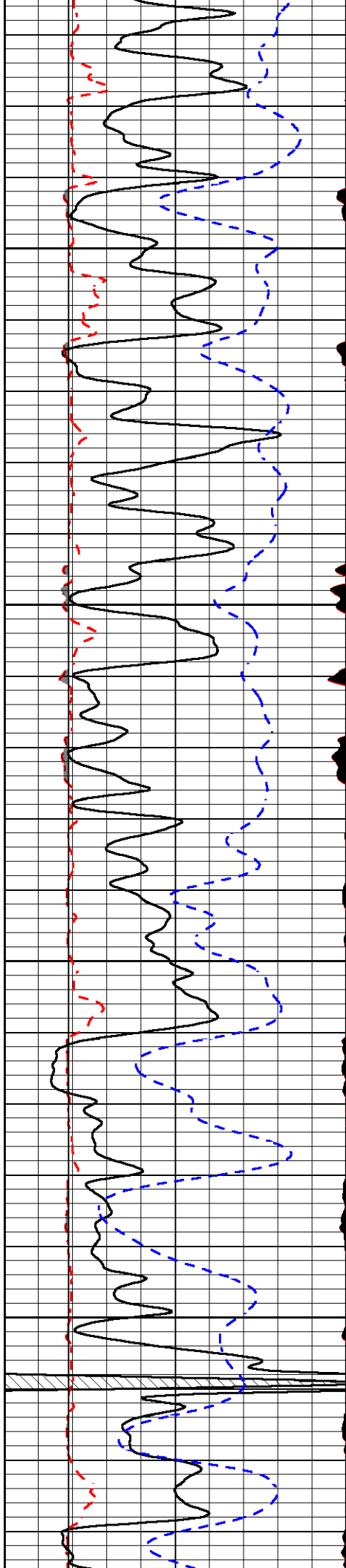
MAIN PASS

Database File: great_plains_lang_1.db
 Dataset Pathname: stackml/pass3.1
 Presentation Format: micro
 Dataset Creation: Thu Jul 26 14:12:50 2018
 Charted by: Depth in Feet scaled 1:240

0	GAMMA RAY (GAPI)	150
6	MICRO CALIPER (in)	16
6	BIT SIZE (in)	16
-200	SP (mV)	0

0	MICRO INVERSE 1 X 1 (Ohm-m)	40
0	MICRO NORMAL 2" (Ohm-m)	40
15000	LINE TENSION (lb)	0



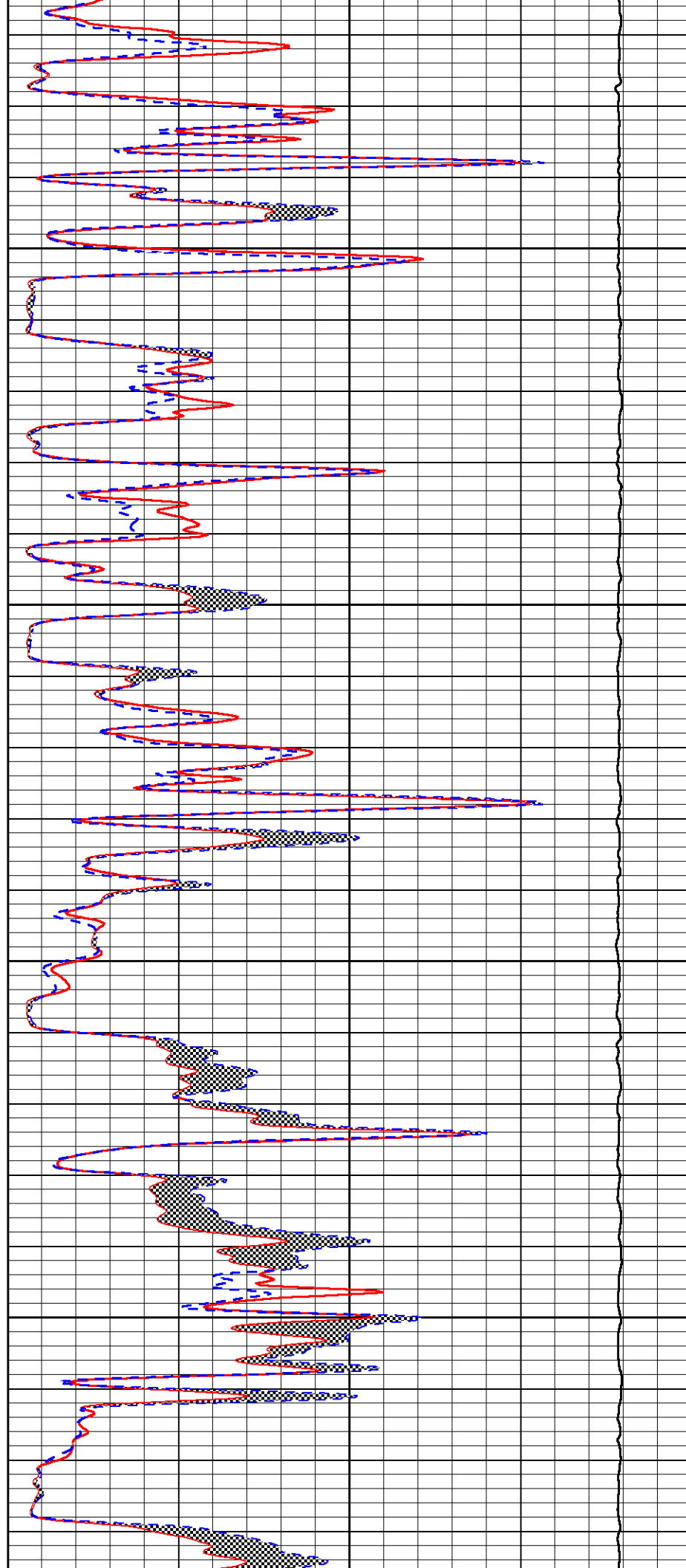


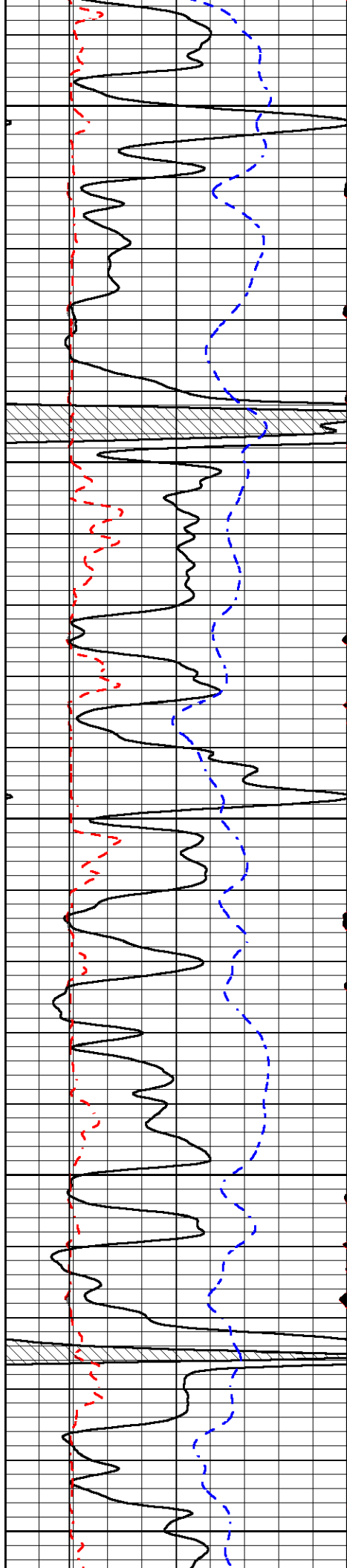
3100

3150

3200

3250





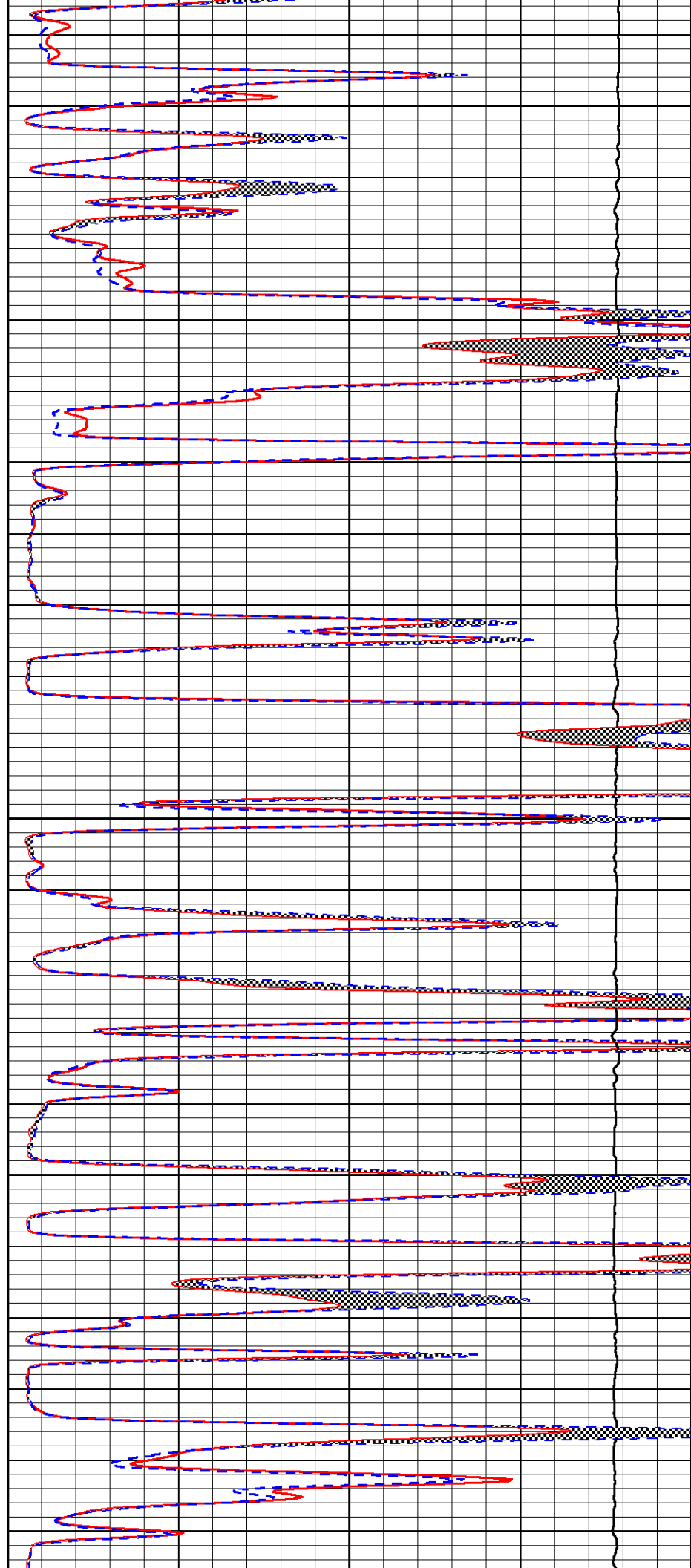
3300

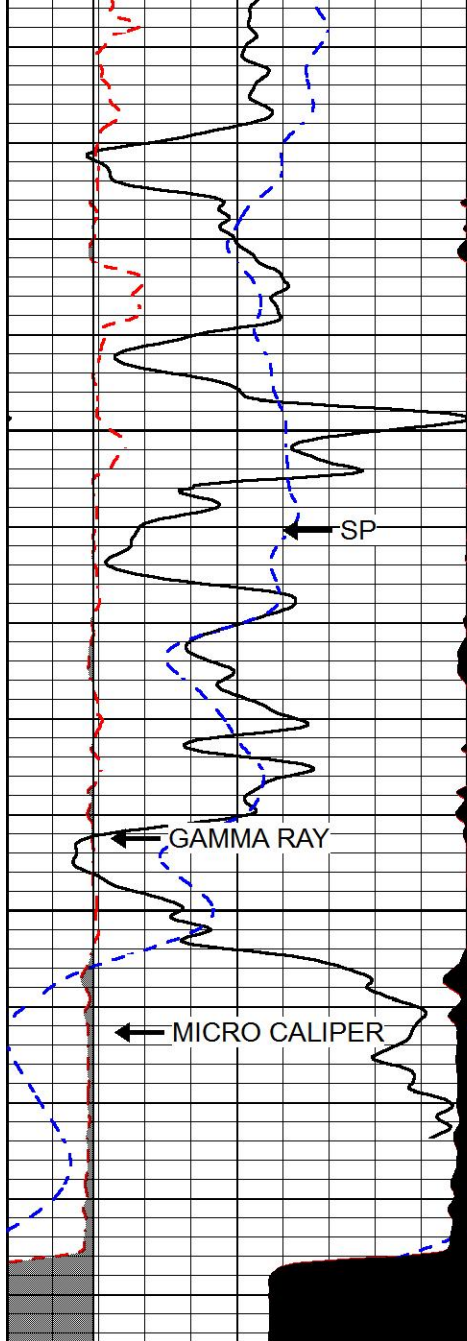
3350

3400

3450

3500





3550

SP

GAMMA RAY

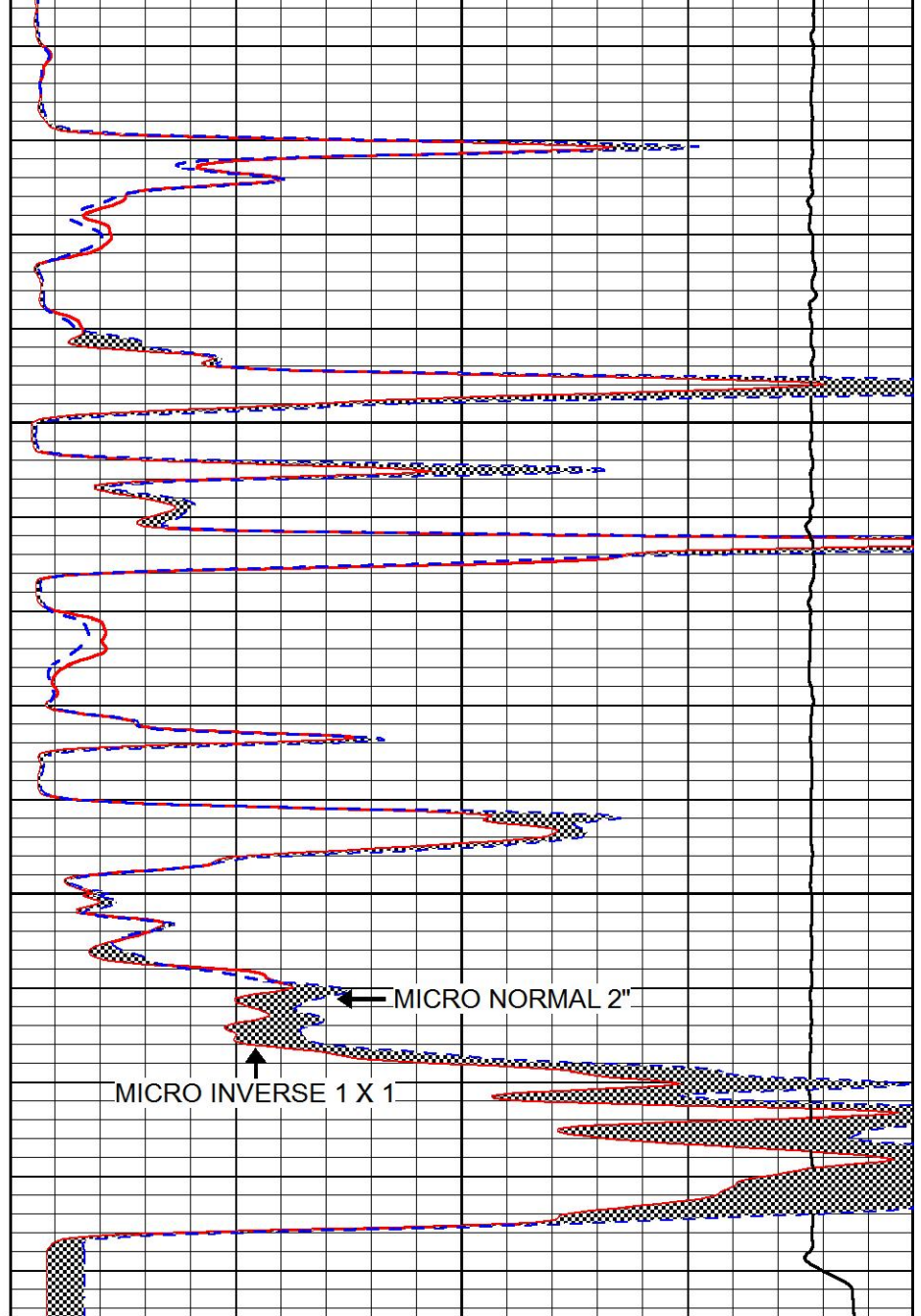
MICRO CALIPER

3600

MICRO NORMAL 2"

MICRO INVERSE 1 X 1

0	GAMMA RAY (GAPI)	150
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15000	LINE TENSION (lb)	0



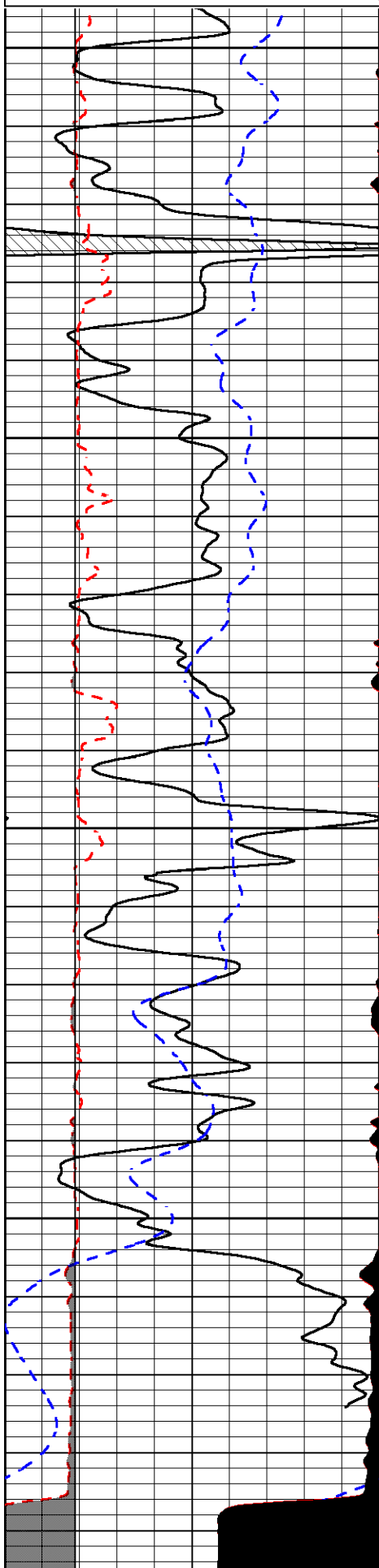
REPEAT SECTION

Database File great_plains_lang_1.db
 Dataset Pathname stackml/pass2.1
 Presentation Format micro
 Dataset Creation Thu Jul 26 14:49:42 2018
 Charted by Depth in Feet scaled 1:240

0	GAMMA RAY (GAPI)	150
6	MICRO CALIPER (in)	16
6	BIT SIZE (in)	16

0	MICRO INVERSE 1 X 1 (Ohm-m)	40
0	MICRO NORMAL 2" (Ohm-m)	40
15000	LINE TENSION (lb)	0

-200 SP (mV) 0



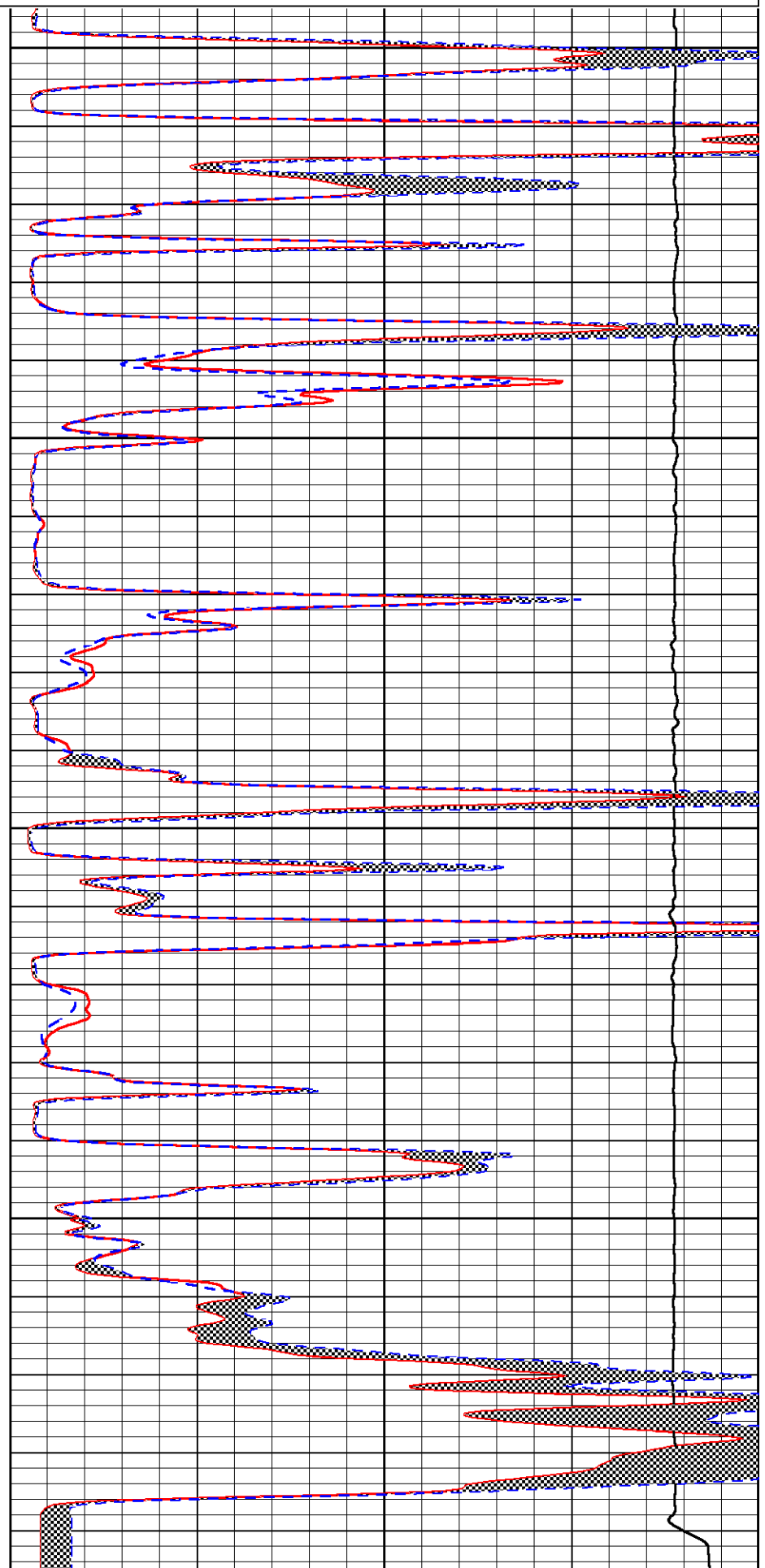
3450

3500

3550

3600

0	GAMMA RAY (GAPI)	150
6	MICRO CALIPER (in)	16
6	BIT SIZE (in)	16



0	MICRO INVERSE 1 X 1 (Ohm-m)	40
0	MICRO NORMAL 2" (Ohm-m)	40
15000	LINE TENSION (lb)	0

Calibration Report

Database File great_plains_lang_1.db
 Dataset Pathname stackml/pass3.1
 Dataset Creation Thu Jul 26 14:12:50 2018

Dual Induction Calibration Report

Serial-Model: 1987-M&W
 Calibration Performed: Tue Apr 11 17:07:38 2017

Loop:	Readings		References			Results	
	Air	Loop	Air	Loop		Gain	Offset
Deep	178.615	710.235	0.000	255.800	mmho/m	0.530	-36.500
Medium	161.982	1441.110	0.000	255.800	mmho/m	0.440	-110.500

Microlog Calibration Report

Serial-Model: PSI-01-PSI STKBL ML
 Performed: Thu Mar 31 18:14:32 2016

	Readings		References			Results	
	Zero	Cal	Zero	Cal		m	b
Normal	0.0000	1.0000	0.0000	1.0000	Ohm-m	14500.0000	0.0000
Inverse	0.0000	1.0000	0.0000	1.0000	Ohm-m	16000.0000	0.0000
Caliper	1.0001	1.1397	6.5000	18.5000	in	86.0000	-82.7000

Compensated Density Calibration Report

Serial-Model: 168-130-M&W
 Source / Verifier: /
 Master Calibration Performed: Sun Nov 17 12:46:06 2013

Master Calibration

	Density		Far Detector	Near Detector	
		g/cc		cps	
Magnesium	1.755	g/cc	4659.47	5064.14	cps
Aluminum	2.680	g/cc	853.93	3180.74	cps
Spine Angle = 74.67			Density/Spine Ratio = 0.526		
	Size		Reading		
Small Ring	4.00	in	0.91		
Large Ring	14.00	in	0.22		

Compensated Neutron Calibration Report

Serial Number: tk10-MW
 Tool Model: M&W
 Calibration Performed: Wed Nov 16 11:21:36 2016

Detector Readings Target Normalization

Short Space	6240.00	cps	1000.00	cps	1.6025
Long Space	460.00	cps	1000.00	cps	1.9500

Gamma Ray Calibration Report

Serial Number:	89-M&W	
Tool Model:	M&W	
Calibration Performed:	Tue Apr 11 17:08:01 2017	
Calibrator Value:	1000.0	GAPI
Background Reading:	0.0	cps
Calibrator Reading:	6.2	cps
Sensitivity:	0.5200	GAPI/cps



PIONEER
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Well	LANG NO. 1
Field	WILDCAT
County	NORTON
State	KANSAS